



IT900A PIM9A Product Brief Datasheet

IT900A-DS-002-R1.0

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1. Introduction

The IT900A-9A Plug-in Module (PIM9A) is a high-performance, cost-effective Powerline Communication (PLC) modem for a variety of applications, such as Smart Grid (AMR, AMM & AMI), Home Energy Management, M2M and additional industrial and commercial applications. The PIM9A is a ready to use module that allows straight forward integration (without a real need for manufacture's support), enables short time to market and quick field deployment with minimal efforts and resources.

2. PIM9A Variations

There are 7 variations of PIM-9A modules for 4 different frequency bands defined by the following regulations:

1. US (FCC: 120-400 kHz)
2. Japan (ARIB, MPT: 120-400 kHz)
3. Europe Outdoor:
 - a. CA: (CENELEC Band A: 20-80 kHz)
 - b. CA2: (CENELEC Band A: 72-92 kHz)
 - c. CA3: (CENELEC Band A: 65-95 kHz)
 - d. CA4: (CENELEC Band A: 45-95 kHz)
4. Europe Indoor: (CENELEC Band B: 95-125 kHz)



Figure 1: IT900A PIM9A

To facilitate the evaluation and development process, this PIM can be operated with Yitran's Starter Kit platform.

3. IT900A Block Diagram

The following diagram shows the IT900A PIM9A blocks:

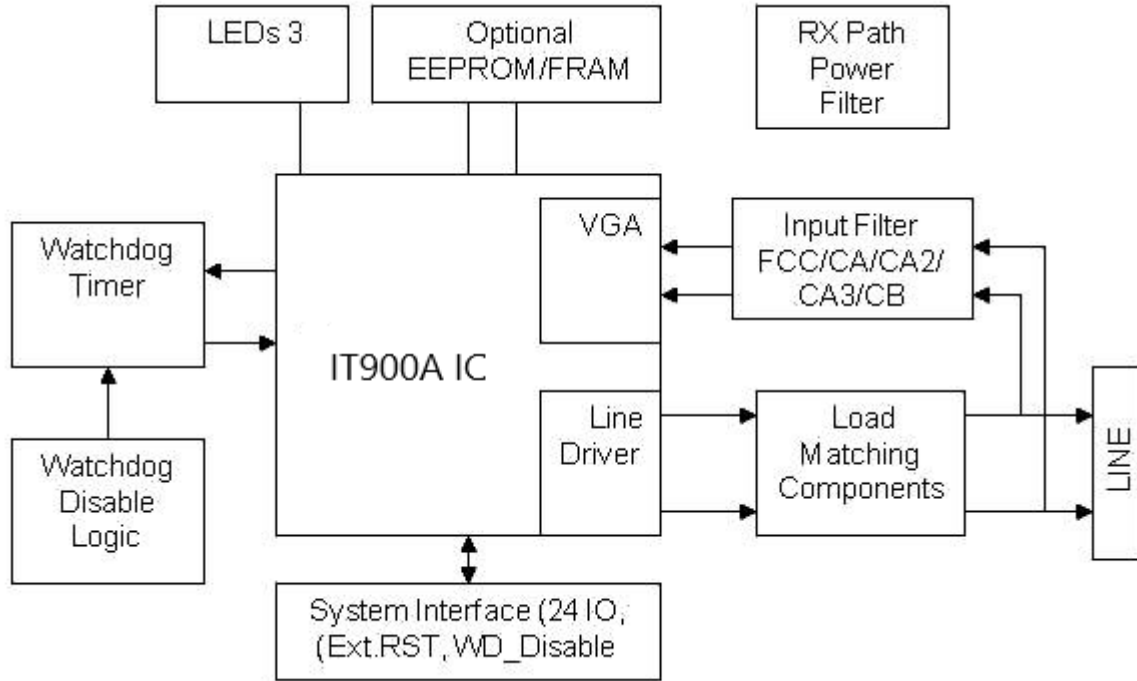


Figure 2: IT900A Block Diagram

4. IT900A PIM9A Main Features

- High-performance, cost-effective Powerline Communication (PLC) plug-in module.
- Incorporates Yitran's IT900A low-cost and robust PLC System-on-a-Chip (SoC).
- Compliant to HomePlug® Command and Control 1.0 (HPCC) standard.
- FCC, CENELEC & ARIB frequency bands & EMC compliance.
- Operation voltage: $+3.3V \pm 5\%$, 0.5A max.
- Dimensions: 21.5 x 32 mm
 - Height:
 - PCB: 1.6mm
 - Max. bottom: 4.5mm
 - Max. top: 2.42 mm
- Weight: 5.2gr ($\pm 1\%$).
- Temperature range:
 - Operation: -40 to +85 degC
 - Max. storage temperature: 105 degC
- Humidity range:
 - Operation: 20% - 100% (no condensation)
- Halogen Free, Lead Free, RoHS complaint
- CE IEC/EN 60950-1 compliant

5. IT900A PIM9A Main Applications

- Smart Grid Applications:
 - Automated Meter Reading (AMR)
 - Advanced Metering Infrastructure (AMI)
 - Demand Response & Real-Time pricing
- Smart Home & Energy Management:
 - Home & Building Automation
 - Home Appliance Control & Diagnostics
 - Security, Access and Environmental Control
- Industrial and Commercial Applications:
 - M2M
 - Street Light, Vending Machine, Signage Control

6. IT900A PIM9A Connector Pin out

The IT900A PIM9A incorporates a 32 pin gold-plated connector with the following signals:

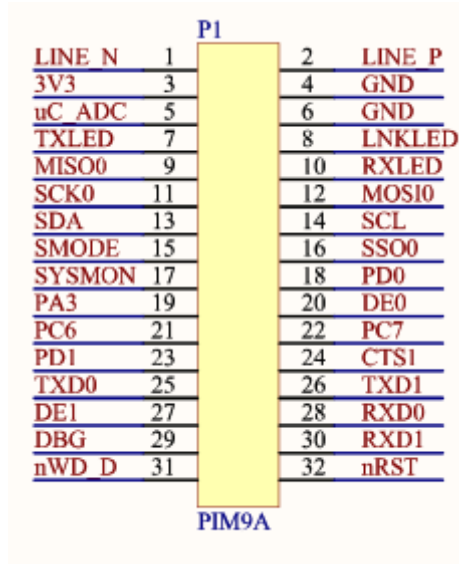


Figure 3: IT900A PIM9A Connector pin-out

The following table describes the interface signals:

Pin #	Signal or Function	Comment
1	LINE_N	Powerline Signal
2	LINEP	Powerline Signal
3	+3.3V	Power Supply +3.3V
4	GND	GND
5	uC_ADC	Analog input for MCU ADC
6	GND	GND
7	TX LED	TX LED / Active Low
8	LINK LED	Link LED / Active Low
9	PC5	GPIO/MISO0
10	RX LED	RX LED / Active Low
11	PC5	GPIO / SCK0

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Pin #	Signal or Function	Comment
12	PC4	GPIO/MOSI0
13	PA7	I2C (SDA)
14	PA6	I2C (SCL)
15	PD7	Safe Mode
16	PC2	GPIO / SSO0
17	PC0	GIO / System Monitor
18	PD0	GIO
19	PA3	UART SlowRate
20	PA2	GIO
21	PC6	GIO
22	PC7	GIO
23	PD1	GIO
24	PD6	GIO / JTAG (CTS1)
25	PA5	GPIO/UART (TXD0)
26	PD5	GPIO/UART (TXD1)
27	PD3	GPIO/DE1
28	PA4	GPIO/UART (RXD0)
29	DBG	JTAG
30	PD4	GIO / UART (RXD1)
31	nWD_D	H/W Watchdog Disable
32	nRST	IT900A IC External Reset (Active Low)

Table 1: PIM9A Connector Pinout

7. PIM9A Connector Dimensions and Height Limitations

The IT900A PIM 9A connector consists of a single header with 2 rows of 16 pins. The picture below details the dimensions of the Female Connector for the IT900A PIM 9A.

Female Header 2.0mm 2 Row H=4.0/4.3/4.6mm Straight Type

SPECIFICATION

Current Rate:1.5 AMP
 Insulation Resistance:1000MΩ Min.
 Contact Resistance:20mΩ Max.
 Dielectric Voltage:500V AC for one minute
 Operation Temperature:-40°C to +105°C

MATERIAL

Insulator:Polyester,UL 94V-0
 Standard:PBT or Nylon 6T
 Contact Pin:Copper Alloy
 Contact Plating:Gold Flash all over

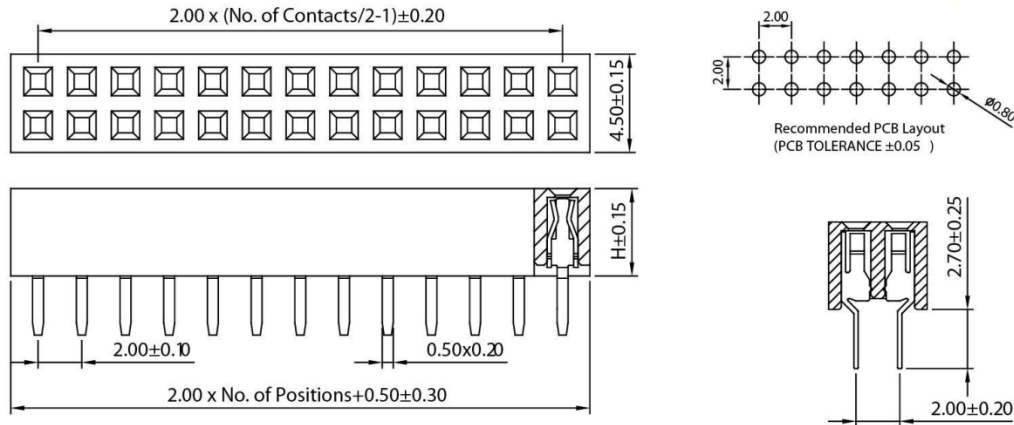
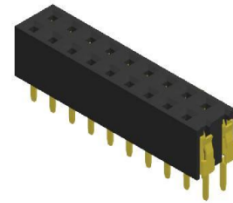


Figure 4: Female header specifications

Height limitations:

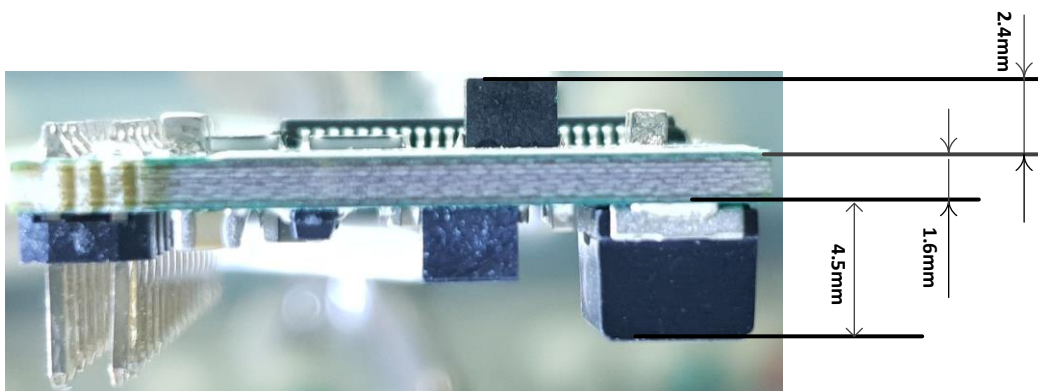


Figure 5: PIM9A Height Limitations

8. Led Indications

The IT900A PIM9A has the following LEDs with the following indications:

- RX mode – Green (dedicated line)
- TX mode – Red (configurable GPIO)
- LINK – Green (configurable GPIO)

9. Encryption

Symmetric Block Cipher Algorithm – 128-bit AES in CTR mode is available. The encryption algorithms are fixed and can't be modified by the user

10. Application Recommendations

It is recommended to use two bypass capacitors (100 uF Tantalum and 0.1 uF ceramic) connected to the power rail (+3.3V and GND). These capacitors must be located close to the power pin of the PIM.

11. Ordering Information

Part No.	Manufacture Code	Remarks
IT900A-PIM9A-CA	1227V2.1-CA	Operation band 20-80 kHz
IT900A-PIM9A-CA2	1227V2.1-CA2	Operation band 72-90 kHz
IT900A-PIM9A-CA3	1227V2.1-CA3	Operation band 65-95 kHz
IT900A-PIM9A-CA4	1227V2.1-CA4	Operation band 45-95 kHz
IT900A-PIM9A-CB	1227V2.1-CB	Operation band 95-120 kHz
IT900A-PIM9A-FC	1227V2.1-FC	Operation band 120-400 kHz

Table 2: PIM9A Ordering Information

Proprietary Information

Document Control

Revision	Date	Description
1.0	June 2024	Creation

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